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EXAMINER				
CHORBAJ, MONZER R				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/529,629

Applicant(s)

DIETSCHE ET AL.

Examiner

MONZER R. CHORBAJI

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This final action is in response to the amendment received on 12/11/08

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-3, 6, 10-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tropsch et al (U.S.P.N. 6,458,348) in view of In re Wertheim and further in view of Steckler (U.S.P.N. 4,036,788).

Regarding claim 1, Tropsch teaches a method of killing microorganisms in aqueous systems (col.12, lines 21-28) comprising adding a biocide to the system where upon reading col.12, lines 21-28, one would recognize that Tropsch adds the biocidal composition to the water in the cooling circuits to prevent or control the growth of microorganisms. As to the biocide comprising from 0.001 to 5% by weight of at least one water-soluble polymer (col.11, lines 55-56), Tropsch teaches that the concentration of the polymer in the aqueous solution, depending on the molecular weight, is from 5 to 60% by weight (col.6, lines 47-49) and further teaches that the concentration of polymer depends on the type of the microorganisms to be controlled and on the composition of the material to be protected (col.14, lines 7-10). As such one would recognize that the suggested range in Tropsch is an exemplary range that is subject to change outside its endpoints to lower or higher values depending on the type of microorganism present, or on the molecular weight of the polymer used, or on the composition of the material to be protected as taught by Tropsch where, for example, if the degree of contamination of water is minimal, one skilled in the art would recognize decreasing the concentration of the biocide composition to less than 5% by weight in order to control the growth of microorganisms in the water without wasting unnecessary additional amounts of the composition.

Tropsch discloses in one embodiment (col.9, lines 34-67 and col.10, lines 1-53) that the composition comprises compounds a and b and also includes additional prepolymers or also known as prepolymers (col.9, lines 38-41) such as styrenesulfonic acid (col.10, line 53 where styrenesulfonic acid is considered as component a in the claim) whose concentration ranges up to 99.9 mol% or up to 95 mol% (col.9, lines 38-41). Tropsch teaches (col.14, lines 7-10) that the concentrations of the polymers used in the various embodiments described depends on the type of microorganisms to be controlled and on the composition of the material to be protected. As such It would have been obvious to one of ordinary skill in the art at the time of the invention to readily recognize that if, for example, the concentration of a certain microorganism is not as high as thought to be, or if the type of the microorganism to be treated is highly susceptible to low dosages of the biocidal composition, then much lower concentrations of the polymers, or a highly diluted composition would be expected to achieve the result of treating water thereby providing economical and effective disinfection and that determining the optimum working range is obvious through routine experimentation. In the same embodiment, Tropsch discloses a list of exemplifying compounds that includes N-vinylpyrrolidone (col.9, line 28 and lines 38-49 where N-vinylpyrrolidone is considered as component b in the claim) at a concentration range from 0 to 99 mol% (col.9, line 26) and that the composition further includes acrylonitrile (col.9, line 31 where acrylonitrile is considered as component c in the claim) at a concentration range from 0 to 99 mol% (col.9, line 26). As to the limitation that the mol% is based on the total molar amount of monomer units present in the polymer, Tropsch teaches that the

mol% range from 0 to 99 is based on the different types of the ethylenically unsaturated monomers used (col.9, lines 26-27). For example, N-vinylpyrrolidone is a polymer made up of monomers where the concentration of this polymer is based on the total molar amount of the monomers (col.9, lines 26-28) present within polymer N-vinylpyrrolidone.

As to the limitation that the sum of a, b, and c components totals 100 mol%, Tropsch teaches (col.2, lines 26-27) that the sum of all mole percentages is equal to 100 and further teaches in one embodiment (col.9, lines 34-67 and col.10, lines 1-53) that the composition comprises compounds a and b and also includes additional prepolymers or also known as prepolymers such as styrenesulfonic acid (considered as a in the recited claim) where the total mole percent is 100. However, based on these teachings, the composition in col.9, line 25 can be made up of only primary vinylamine (considered also as component a in the claim) at 100 mol%, or the composition in col.9, lines 26 and 39-40 can be made up of 99 mol% of N-vinylpyrrolidone (considered as component b in the claim) and 1 mol% of styrenesulfonic acid (considered as a in the claim), or the composition in col.9, lines 25-26 and lines 39-40 can be made up of 1 mol% of primary vinylamine and 99 mol% of styrenesulfonic acid, or the composition in col.9, lines 25-31 and lines 39-40 can be made up of the following: 1 mole% of primary vinylamine (considered as component b in the claim); and 90 mol% of acrylonitrile (considered as component c in the claim). As to the limitation that the concentration of primary vinylamine being 1 mole%, Tropsch teaches (col.14, lines 7-10) that the concentrations of the polymers used in the various embodiments described depends on the type of microorganisms to be controlled and on the composition of the material to be

protected. As such It would have been obvious to one of ordinary skill in the art at the time of the invention to readily recognize based on the teachings of Tropsch that if, for example, the concentration of a certain microorganism is higher than expected, or if the type of the microorganism to be treated is highly resistant to the recommended dosage of the biocidal composition, then higher concentrations of the polymers, or a concentrated composition would be expected to achieve the result of treating water thereby providing effective disinfection where determining the optimum working range is an obvious matter of routine experimentation that is within the purview of the skilled artisan. Only the expected results are attainable. In addition, Tropsch teaches that 9 mol% of styrenesulfonic acid (considered as a in the claim) that totals to 100 mole%.

As to the limitation that the concentration of styrenesulfonic acid is 9 mole%, Tropsch teaches (col.14, lines 7-10) that the concentrations of the polymers used in the various embodiments described depends on the type of microorganisms to be controlled and on the composition of the material to be protected. As such It would have been obvious to one of ordinary skill in the art at the time of the invention to readily recognize based on the teachings of Tropsch that if, for example, the concentration of a certain microorganism is higher than expected, or if the type of the microorganism to be treated is highly resistant to the exemplary dosage of the biocidal composition, then higher concentrations of the polymers, or a concentrated composition would be expected to achieve the result of treating water thereby providing effective disinfection where determining the optimum working range is an obvious matter of routine

experimentation that is within the purview of the skilled artisan. Only the expected results are attainable.

Tropsch fails to teach using N-vinylactam. Steckler discloses an anionic hydrogel composition that in one embodiment includes germicides and in another embodiment, the hydrogel composition is used to recover basic or cationic materials and to purify water containing such material (abstract, lines 23-32). Steckler further teaches that the hydrogel composition includes, among others, N-vinylactam (col.1, lines 10-12 and col.4, lines 16-24) as component a, since such a component contributes to the hydrogel properties of the composition (col.9, lines 45-49). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method in Tropsch with the N-vinylactam, since such a compound contributes to the hydrogel properties of the composition as explained by Steckler (col.9, lines 45-49).

Regarding claim 2, Tropsch discloses in one embodiment (col.9, lines 34-67 and col.10, lines 1-53) that the composition comprises compounds a and b and also includes additional prepolymers or also known as prepolymers (col.9, lines 38-41) such as styrenesulfonic acid (col.10, line 53 where styrenesulfonic acid is considered as component a in the claim) where water (in col.14, lines 22-23, Tropsch teaches diluting the water-soluble polymeric composition in water to determine its minimum inhibitory concentration against microorganisms and this considered a polymeric biocidal composition comprising water) has been added to the composition. In paragraph 7, on page 5 of the specification, Applicant teaches that the sulfonic acid groups of the styrenesulfonic acid units in the polymer may convert to salts where one would

recognize that in an aqueous solution, the sulfonic acid groups of the styrenesulfonic acid component present in the biocidal composition converts into salts.

Regarding claim 3, Tropsch discloses a biocidal composition that can be in aqueous dispersions form (col.12, line 53) where water (in col.14, lines 22-23, Tropsch teaches diluting the water-soluble polymeric composition in water to determine its minimum inhibitory concentration against microorganisms and this considered a polymeric biocidal composition comprising water) has been added to the dispersions composition.

Regarding claim 6, Tropsch teaches adding the biocidal composition to cooling circuits (col.12, lines 25-26, which considered heat exchanger circuits).

Regarding claim 10, Tropsch discloses in one embodiment (col.9, lines 34-67 and col.10, lines 1-53) that the composition comprises compounds a and b and also includes additional prepolymers or also known as prepolymers (col.9, lines 38-41) such as styrenesulfonic acid (col.10, line 53 where styrenesulfonic acid is considered as component a in the claim) whose concentration ranges up to 99.9 mol% or up to 95 mol% (col.9, lines 38-41). In the same embodiment, Tropsch discloses a list of exemplifying compounds that includes N-vinylpyrrolidone (col.9, line 28 and lines 38-49 where N-vinylpyrrolidone is considered as component b in the claim) at a concentration range from 0 to 99 mol% (col.9, line 26).

Tropsch fails to teach using N-vinylactam. Steckler discloses an anionic hydrogel composition that in one embodiment includes germicides and in another embodiment, the hydrogel composition is used to recover basic or cationic materials and to purify

water containing such material (abstract, lines 23-32). Steckler further teaches that the hydrogel composition includes, among others, N-vinylactam (col.1, lines 10-12 and col.4, lines 16-24) as component a, since such a component contributes to the hydrogel properties of the composition (col.9, lines 45-49). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method in Tropsch with the N-vinylactam, since such a compound contributes to the hydrogel properties of the composition as explained by Steckler (col.9, lines 45-49).

Regarding claim 11, Tropsch teaches that the prepolymers can further be modified through copolymerizing (col.10, lines 58-61) with the use of crosslinkers (col.11, lines 3-4) where all the components including acrylonitrile (considered as the free-radically polymerizable monomers) with contain the crosslinkers upon undergoing copolymerization process.

Regarding claim 13, Tropsch teaches that the composition further includes acrylonitrile (col.9, line 31 where acrylonitrile is considered as the free-radically polymerizable monomer or component c in the claim) at a concentration range from 0 to 99 mol% (col.9, line 26).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tropsch et al (U.S.P.N. 6,458,348) in view of Steckler (U.S.P.N. 4,036,788) as applied to claim 3 and further in view of Zhou et al (U.S.P.N. 6,482,392).

Tropsch and Steckler fail to teach to ionically stabilize the dispersion. Zhou discloses polymeric antimicrobial dispersions compositions for disinfecting surfaces (col.2, lines 51-53) where anionic polymers (considered as ionically stabilizing the

dispersion) to cause stable homogeneous distribution of the components within the liquid composition (col.4, lines 13-17) in order to produce antimicrobial compositions that can exist in various forms (col.4, lines 20-24). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modified method in Tropsch/Steckler with anionic polymers in order to produce antimicrobial compositions that can exist in various forms as explained by Zhou (col.4, lines 20-24).

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tropsch et al (U.S.P.N. 6,458,348) in view of Steckler (U.S.P.N. 4,036,788) as applied to claim 10 and further in view of Carrier et al (U.S.P.N. 6,040,406).

Tropsch and Steckler fail to teach that water-dispersible polymer has a polydispersity Mw/Mn from 1.3 to less than 3. Carrier discloses a water-soluble treatment polymeric composition (col.2, lines 60-63) where the water-dispersible polymer has a polydispersity of 2.06 (col.12, lines 12-14) in order to produce water-dispersible polymeric biocidal compositions that can be applied in various unrelated water treatment fields such as cooling towers applications and oil field applications (col.9, lines 9-20). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modified method in Tropsch/Steckler with polydispersity value of 2.06 in order to produce water-dispersible polymeric biocidal compositions that can be applied in various unrelated water treatment fields such as cooling towers applications and oil field applications as explained by Carrier (col.9, lines 9-20).

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tropsch et al (U.S.P.N. 6,458,348) in view of Steckler (U.S.P.N. 4,036,788) as applied to claim 11 and further in view of Guerin et al (U.S.P.N. 5,712,339).

Tropsch and Steckler fail to teach the use of acetoacetoxyethyl methacrylate. Guerin teaches an aqueous polymer dispersions (col.1, lines 3-5) having a biocidal component (col.6, lines 66-67) and further teaches including the compound acetoacetoxyethyl methacrylate (col.2, line 52) in order to improve crosslinkable and grafting ability of the polymeric composition (col.2, lines 47-48). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modified method in Tropsch/Steckler with the compound acetoacetoxyethyl methacrylate in order to improve crosslinkable and grafting ability of the polymeric composition as explained by Guerin (col.2, lines 47-48).

8. Claims 5, 7, 9, 15-16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tropsch et al (U.S.P.N. 6,458,348) in view of Steckler (U.S.P.N. 4,036,788) and further in view of Wellinghoff et al (U.S.P.N. 5,922,776).

Regarding claim 7, Tropsch discloses a method of protecting articles (incorporating the biocidal composition in finishing of products is considered protecting the products as mentioned in col.12, lines 6-8) by applying an antimicrobial composition comprising water (in col.14, lines 22-23, Tropsch teaches diluting the water-soluble polymeric composition in water to determine its minimum inhibitory concentration against microorganisms and this considered a polymeric biocidal composition comprising water) and a biocide (col.13, lines 4-10) to the article. As to the biocide comprising from 0.001 to 5% by weight of at least one water-soluble polymer (col.11, lines 55-56), Tropsch teaches that the concentration of the polymer in the

aqueous solution, depending on the molecular weight, is from 5 to 60% by weight (col.6, lines 47-49) and further teaches that the concentration of polymer depends on the type of the microorganisms to be controlled and on the composition of the material to be protected (col.14, lines 7-10). As such one would recognize that the suggested range in Tropsch is an exemplary range that is subject to change outside its endpoints to lower or higher values depending on the type of microorganism present, or on the molecular weight of the polymer used, or on the composition of the material to be protected as taught by Tropsch where, for example, if the degree of contamination of water is minimal, one skilled in the art would recognize decreasing the concentration of the biocide composition to less than 5% by weight in order to control the growth of microorganisms in the water without wasting unnecessary additional amounts of the composition. Tropsch discloses in one embodiment (col.9, lines 34-67 and col.10, lines 1-53) that the composition comprises compounds a and b and also includes additional prepolymers or also known as prepolymers (col.9, lines 38-41) such as styrenesulfonic acid (col.10, line 53 where styrenesulfonic acid is considered as component a in the claim) whose concentration ranges up to 99.9 mol% or up to 95 mol% (col.9, lines 38-41). In the same embodiment, Tropsch discloses a list of exemplifying compounds that includes N-vinylpyrrolidone (col.9, line 28 and lines 38-49 where N-vinylpyrrolidone is considered as component b in the claim) at a concentration range from 0 to 99 mol% (col.9, line 26) and that the composition further includes acrylonitrile (col.9, line 31 where acrylonitrile is considered as component c in the claim) at a concentration range from 0 to 99 mol% (col.9, line 26). As to the limitation that the mol% is based on the total molar amount of monomer units present in the polymer, Tropsch teaches that the mol% range from 0 to 99 is based on the different types of the ethylenically

unsaturated monomers used (col.9, lines 26-27). For example, N-vinylpyrrolidone is a polymer made up of monomers where the concentration of this polymer is based on the total molar amount of the monomers (col.9, lines 26-28) present within polymer N-vinylpyrrolidone.

As to the limitation that the sum of a, b, and c components totals 100 mol%, Tropsch teaches (col.2, lines 26-27) that the sum of all mole percentages is equal to 100 and further teaches in one embodiment (col.9, lines 34-67 and col.10, lines 1-53) that the composition comprises compounds a and b and also includes additional prepolymers or also known as prepolymers such as styrenesulfonic acid (considered as a in the recited claim) where the total mole percent is 100. However, based on these teachings, the composition in col.9, line 25 can be made up of only primary vinylamine (considered also as component a in the claim) at 100 mol%, or the composition in col.9, lines 26 and 39-40 can be made up of 99 mol% of N-vinylpyrrolidone (considered as component b in the claim) and 1 mol% of styrenesulfonic acid (considered as a in the claim), or the composition in col.9, lines 25-26 and lines 39-40 can be made up of 1 mol% of primary vinylamine and 99 mol% of styrenesulfonic acid, or the composition in col.9, lines 25-31 and lines 39-40 can be made up of the following: 1 mole% of primary vinylamine (considered as component b in the claim); 90 mol% of acrylonitrile (considered as component c in the claim); and 9 mol% of styrenesulfonic acid (considered as a in the claim) that totals to 100 mol%.

Tropsch fails to teach using N-vinylactam and also fails to teach removing the water from the biocidal composition. Steckler discloses an anionic hydrogel composition that in one embodiment includes germicides and in another embodiment, the hydrogel

composition is used to recover basic or cationic materials and to purify water containing such material (abstract, lines 23-32). Steckler further teaches that the hydrogel composition includes, among others, N-vinylactam (col.1, lines 10-12 and col.4, lines 16-24) as component a, since such a component contributes to the hydrogel properties of the composition (col.9, lines 45-49). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method in Tropsch with the N-vinylactam, since such a compound contributes to the hydrogel properties of the composition as explained by Steckler (col.9, lines 45-49).

Steckler fails to teach removing the water from the biocidal composition. Wellinghoff discloses a biocide composition that includes, among others, polymeric material (col.3, lines 14-18) where the composition can be formulated into various ways including spray drying methods so that the composition can accommodate a wide range of end use applications (col.13, lines 42-47). Spray drying method is known in the art to dry composition through contact with a hot gas, thereby removing the water component. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modified method in Tropsch/Steckler with the spray-drying step so that the composition can accommodate a wide range of end use applications as explained by Wellinghoff (col.13, lines 42-47).

Regarding claim 5, Tropsch and Steckler fail to teach that the dispersion is spray dried. Wellinghoff discloses a biocide composition that includes, among others, polymeric material (col.3, lines 14-18) where the composition can be formulated into various ways including spray drying methods so that the composition can accommodate a wide range of end use applications (col.13, lines 42-47). It would have been obvious to one of ordinary skill in the art

at the time of the invention to provide the modified method in Tropsch/Steckler with the spray-drying step so that the composition can accommodate a wide range of end use applications as explained by Wellinghoff (col.13, lines 42-47).

Regarding claim 9, Tropsch teaches that the prepolymers can further be modified through copolymerizing (col.10, lines 58-61) with the use of crosslinkers (col.11, lines 3-4).

Regarding claim 15, Tropsch discloses in one embodiment (col.9, lines 34-67 and col.10, lines 1-53) that the composition comprises compounds a and b and also includes additional prepolymers or also known as prepolymers (col.9, lines 38-41) such as styrenesulfonic acid (col.10, line 53 where styrenesulfonic acid is considered as component a in the claim) whose concentration ranges up to 99.9 mol% or up to 95 mol% (col.9, lines 38-41). In the same embodiment, Tropsch discloses a list of exemplifying compounds that includes N-vinylpyrrolidone (col.9, line 28 and lines 38-49 where N-vinylpyrrolidone is considered as component b in the claim) at a concentration range from 0 to 99 mol% (col.9, line 26).

Tropsch fails to teach using N-vinyl lactam. Steckler discloses an anionic hydrogel composition that in one embodiment includes germicides and in another embodiment, the hydrogel composition is used to recover basic or cationic materials and to purify water containing such material (abstract, lines 23-32). Steckler further teaches that the hydrogel composition includes, among others, N-vinyl lactam (col.1, lines 10-12 and col.4, lines 16-24) as component a, since such a component contributes to the hydrogel properties of the composition (col.9, lines 45-49). It would have been obvious to one of

ordinary skill in the art at the time of the invention to provide the method in Tropsch with the N-vinylactam, since such a compound contributes to the hydrogel properties of the composition as explained by Steckler (col.9, lines 45-49).

Regarding claim 16, Tropsch teaches that the prepolymers can further be modified through copolymerizing (col.10, lines 58-61) with the use of crosslinkers (col.11, lines 3-4) where all the components including acrylonitrile (considered as the free-radically polymerizable monomers) with contain the crosslinkers upon undergoing copolymerization process.

Regarding claim 18, Tropsch teaches that the composition further includes acrylonitrile (col.9, line 31 where acrylonitrile is considered as the free-radically polymerizable monomer or component c in the claim) at a concentration range from 0 to 99 mol% (col.9, line 26).

9. Claims 8 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tropsch et al (U.S.P.N. 6,458,348) in view of in view of Steckler (U.S.P.N. 4,036,788) and Wellinghoff et al (U.S.P.N. 5,922,776) as applied to claims 7,16 and further in view of Guerin et al (U.S.P.N. 5,712,339).

Regarding claim 8, Tropsch, Steckler and Wellinghoff fail to teach the use of a binder. Guerin teaches an aqueous polymer dispersions (col.1, lines 3-5) having a biocidal component (col.6, lines 66-67) and further teaches adding a polymer that functions as a binder (Third table in column 8) in order to produce radiation and/or heat curable aqueous coating compositions for application to substrates (col.1, lines 6-8 and lines 11-14). It would have been obvious to one of ordinary skill in the art at the time of

the invention to provide the modified method in Tropsch/Steckler/Wellinghoff with the binder in order to produce radiation and/or heat curable aqueous coating compositions for application to substrates as explained by Guerin (col.1, lines 6-8 and lines 11-14).

Regarding claim 17, Tropsch, Steckler and Wellinghoff fail to teach the use of acetoacetoxyethyl methacrylate. Guerin teaches an aqueous polymer dispersions (col.1, lines 3-5) having a biocidal component (col.6, lines 66-67) and further teaches including the compound acetoacetoxyethyl methacrylate (col.2, line 52) in order to improve crosslinkable and grafting ability of the polymeric composition (col.2, lines 47-48). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modified method in Tropsch/Steckler/Wellinghoff with the compound acetoacetoxyethyl methacrylate in order to improve crosslinkable and grafting ability of the polymeric composition as explained by Guerin (col.2, lines 47-48).

10. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tropsch et al (U.S.P.N. 6,458,348) in view of in view of Steckler (U.S.P.N. 4,036,788) and Wellinghoff et al (U.S.P.N. 5,922,776) as applied to claim 15 and further in view of Carrier et al (U.S.P.N. 6,040,406).

Tropsch, Steckler and Wellinghoff fail to teach that water-dispersible polymer has a polydispersity Mw/Mn from 1.3 to less than 3. Carrier discloses a water-soluble treatment polymeric composition (col.2, lines 60-63) where the water-dispersible polymer has a polydispersity of 2.06 (col.12, lines 12-14) in order to produce water-dispersible polymeric biocidal compositions that can be applied in various unrelated water treatment fields such as cooling towers applications and oil field applications

(col.9, lines 9-20). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modified method in Tropsch/Steckler/Wellinghoff with polydispersity value of 2.06 in order to produce water-dispersible polymeric biocidal compositions that can be applied in various unrelated water treatment fields such as cooling towers applications and oil field applications as explained by Carrier (col.9, lines 9-20).

Response to Arguments

11. Applicant's arguments see pages 5-6 of the Remarks section, filed on 12/11/08, with respect to the rejections of claims 1-19 under obviousness over Tropsch et al. in view of In re Wertheim and in view of Wellinghoff et al. have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Steckler as shown above.

On pages 5-6 of the Remarks section; Applicant argues that Tropsch cannot reasonably be considered to suggest a feature corresponding to the sum of (a), (b) and (c) totals 100 mol% because in addition to those cited components, Tropsch additionally requires the presence of a monomer having, formula IV or V.

Tropsch teaches (col.2, lines 26-27) that the sum of all mole percentages is equal to 100 (col.2, lines 26-27) where one recognizes that formula IV or V is included in this teaching.

Tropsch further teaches that the concentrations of the various components greatly vary. For example, Tropsch teaches in one embodiment (col.9, lines 34-67 and

col.10, lines 1-53) that the composition comprises compounds a and b and also includes additional prepolymers or also known as prepolymers such as styrenesulfonic acid (considered as a in the recited claim) where the total mole percent is still 100. The composition in col.9, line 25 can be made up of only primary vinylamine (considered also as component a in the claim) at 100 mol%, or the composition in col.9, lines 26 and 39-40 can be made up of 99 mol% of N-vinylpyrrolidone (considered as component b in the claim) and 1 mol% of styrenesulfonic acid (considered as a in the claim), or the composition in col.9, lines 25-26 and lines 39-40 can be made up of 1 mol% of primary vinylamine and 99 mol% of styrenesulfonic acid, or the composition in col.9, lines 25-31 and lines 39-40 can be made up of the following: 1 mole% of primary vinylamine (considered as component b in the claim); and 90 mol% of acrylonitrile (considered as component c in the claim) and 9 mole% of formula IV or V.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

13. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and

any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **MONZER R. CHORBAJI** whose telephone number is (571)272-1271. The examiner can normally be reached on M-F 9:00-5:30.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. R. C./

/Jill Warden/
Supervisory Patent Examiner, Art Unit 1797